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CAPACITY BUFFERS: EXPLAINING THE RETREAT AND RETURN OF THE PHILLIPS CURVE
Capacity Buffers: Explaining the Retreat and Return of the Phillips Curve

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Since the 1960s,
1. Variable and labor costs shares declined
2. Capacity utilization rates declined
3. Phillips curve flattened
4. Idiosyncratic volatility of sales increased

During COVID-19,
1. Large increase demand for goods + restriction on production capacity
2. Firms became capacity constrained
3. Phillips curve steepened

This Paper
Can the size of firms’ capacity buffers explain the changing slope of the Phillips curve?

The Capacity Buffer = 1 – Capacity Utilization Rate = measure of distance to capacity constraint
Excess production capacity of capital stock to buffer against demand fluctuations

Buffer size affects slope of supply curve
Fagnart, Licandro, and Sneessens (1997); Boehm and Pandalai-Nayar, (2022)
Larger Buffer → Smaller probability of becoming capacity constrained → flatter supply curve

Theory
Precautionary capacity buffer due to:
• Putty-clay technology → SR capacity constraints
• Idiosyncratic demand shocks

Capacity Buffer Size, B, determines:
• Probability of becoming capacity constrained → Optimal price via sales-weighted price elasticity

\[ p(B) = \frac{\mu(B)W}{\alpha} \text{ with markup } \mu(B) = \frac{e(B)}{e} - 1 \]

\[ \varepsilon(B) = \frac{\eta(B)}{\varepsilon_p} + \left( 1 - \eta(B) \right) \] sales-weighted price of becoming capacity constrained

• Volatility in the probability of hitting capacity

Evidence
Prices more sensitivity to monetary policy shocks under smaller capacity buffers

Logit Smooth Transition Local Projection Model

Table 1: Relative response of consumption prices to quantities across horizons
<table>
<thead>
<tr>
<th>Horizon (months)</th>
<th>12</th>
<th>18</th>
<th>26</th>
<th>30</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any B P/C</td>
<td>-0.4</td>
<td>-0.13</td>
<td>0.02</td>
<td>0.50</td>
<td>1.21</td>
</tr>
<tr>
<td>B &lt; 15% P/C</td>
<td>0.09</td>
<td>1.34</td>
<td>1.19</td>
<td>3.35</td>
<td>2.84</td>
</tr>
</tbody>
</table>

COVID-19 Sectoral Inflation
Explained by combo of two shocks:
1. Shift in demand from services to goods → Persistent sectoral taste shock
2. Restricted capacity from health restrictions → Temporary capital productivity shock

Goods Sector:
Increase in demand + decrease in capacity → buffers collapsed → steep Phillips Correlation

Services Sector:
Decrease in demand + decrease in capacity → buffers remained → flat Phillips Correlation

Aggregate Inflation Decomposition:
• 59% Demand Shift
• 31% capacity restrictions
• 10% interaction

Total Nonlinear Contribution: 21%

1. Larger markups → 2. larger capacity buffers → 3. flatter Phillips curve

Exogenous Rise in Markups: \( \mu \)
Marginal product of capital rises → Capacity buffer expands
Probability of hitting capacity falls
Volatility in probability of hitting capacity falls
Supply curve flattens

2. Larger capacity buffers → higher demand pass-through into sales → 4. higher idiosyncratic volatility of sales